

LAQUIZ02

Total points 7/10

Subject: Linear Algebra and Ordinary Differential Equations

Batch: B.Tech CS/CS-AI/IT 2020

Semester: II

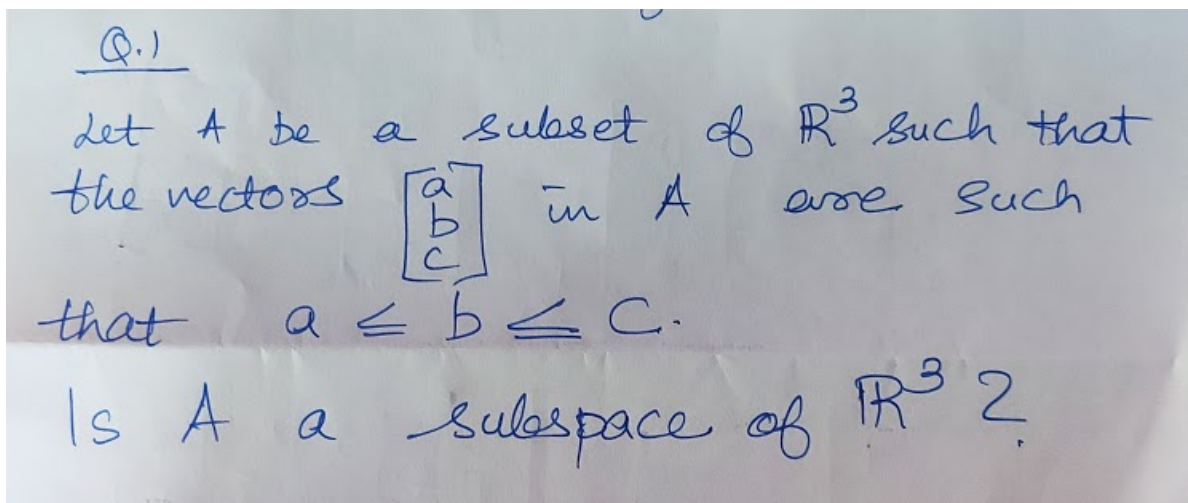
Date: 08/05/2021

Time 10:00-10.30am

Answer all questions. Marks will be awarded for the correct answer.

✗ Q.1*

0/1

☒ Yes☐ No

✗

Correct answer

☒ No

✓ Q.2 *

1/1

Q.2 let $B = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$, $A = \begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix}$
where $a, b, c, d, e, f, g, h, i$ are not equal to zero. Then the column space of AB is equal to the column space of A .

☐ True☒ False

✓



1/1



☐ Option 1

☐ Option 2

☐ Option 3

☐ Option 4



✓ Q.4 *

1/1

Q.4
If the system is solvable
$$\begin{bmatrix} 1 & 2 \\ 2 & 4 \\ 2 & 5 \\ 3 & 9 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} a \\ b \\ c \\ d \end{bmatrix}$$

then what would be $\begin{bmatrix} x \\ y \end{bmatrix}$?

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5a + 2c \\ c + 2a \end{bmatrix}$$

☐ Option 1

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5a - c \\ c + 2a \end{bmatrix}$$

☐ Option 2

$$\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5a - 2c \\ c - 2a \end{bmatrix}$$

☒ Option 3

✓ Q.5 If a 3×5 matrix has the largest possible rank then its column space is ^{*}1/1

- ☐ the five dimensional space
- ☐ the four dimensional space
- ☒ the three dimensional space
- ☐ the two dimensional space
- ☐ the one dimensional space



✗ Q.6 *

0/1

Q.6. $x_3 = \begin{bmatrix} 2 \\ 3 \\ 1 \\ 0 \end{bmatrix}$ is the only special solution to $Ax = 0$ where A is a 3×4 matrix. The rank of A is

- ☐ 4
- ☒ 3
- ☐ 2
- ☐ 1
- ☐ 0



Correct answer

- ☒ 1



✓ Q.7 *

1/1

Q.7 A basis for the subspace of \mathbb{R}^4 consisting of all vectors that are orthogonal to

$$\begin{bmatrix} 1 \\ 1 \\ 0 \\ 0 \end{bmatrix} \quad \text{and} \quad \begin{bmatrix} 1 \\ 0 \\ 1 \\ 1 \end{bmatrix}$$

$$\begin{bmatrix} -1 \\ -1 \\ 0 \\ 0 \end{bmatrix}, \begin{bmatrix} -1 \\ 0 \\ 1 \\ 1 \end{bmatrix}$$

☐ Option 1

$$\begin{bmatrix} 1 \\ -1 \\ -1 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ -1 \\ 0 \\ -1 \end{bmatrix}$$

☒ Option 2

✓

$$\begin{bmatrix} -2 \\ -2 \\ 0 \\ 1 \end{bmatrix}, \begin{bmatrix} -1 \\ 0 \\ 1 \\ 1 \end{bmatrix}$$

☐ Option 3


✓ Q.8 *

1/1

Q.8 The nullspace basis for

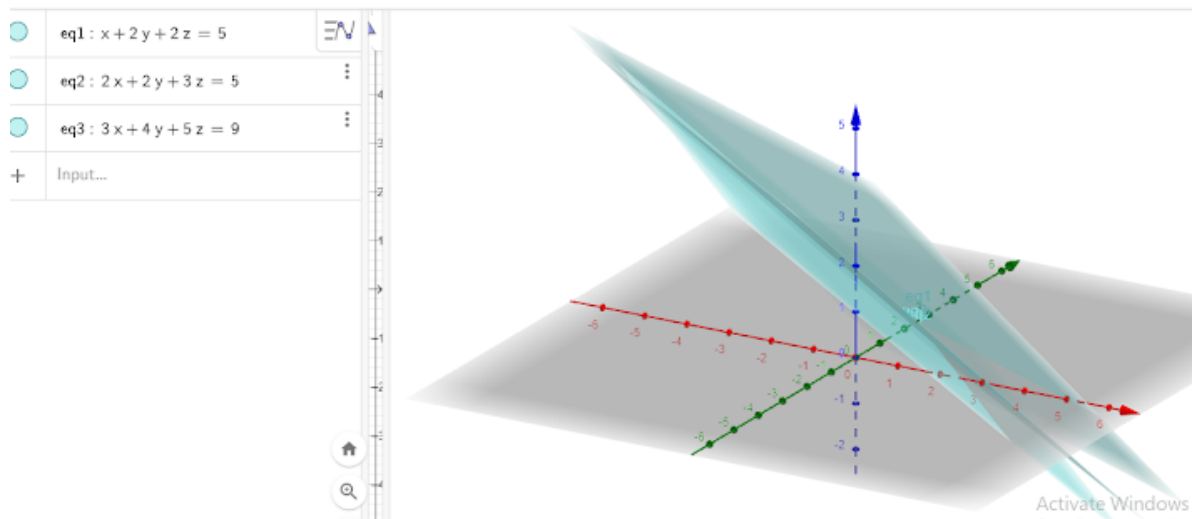
$$A = \begin{bmatrix} 1 & 0 & 0 \\ 6 & 1 & 0 \\ 9 & 8 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 3 & 4 \\ 0 & 1 & 2 & 3 \\ 0 & 0 & 1 & 2 \end{bmatrix}$$

- ☐ (0,1,2,3)
- ☐ (0,0,1,2)
- ☐ (0,-1,2,-1)
- ☒ (0,1,-2,1)



✓ Q.9. A solution to the given system of equations is *

1/1

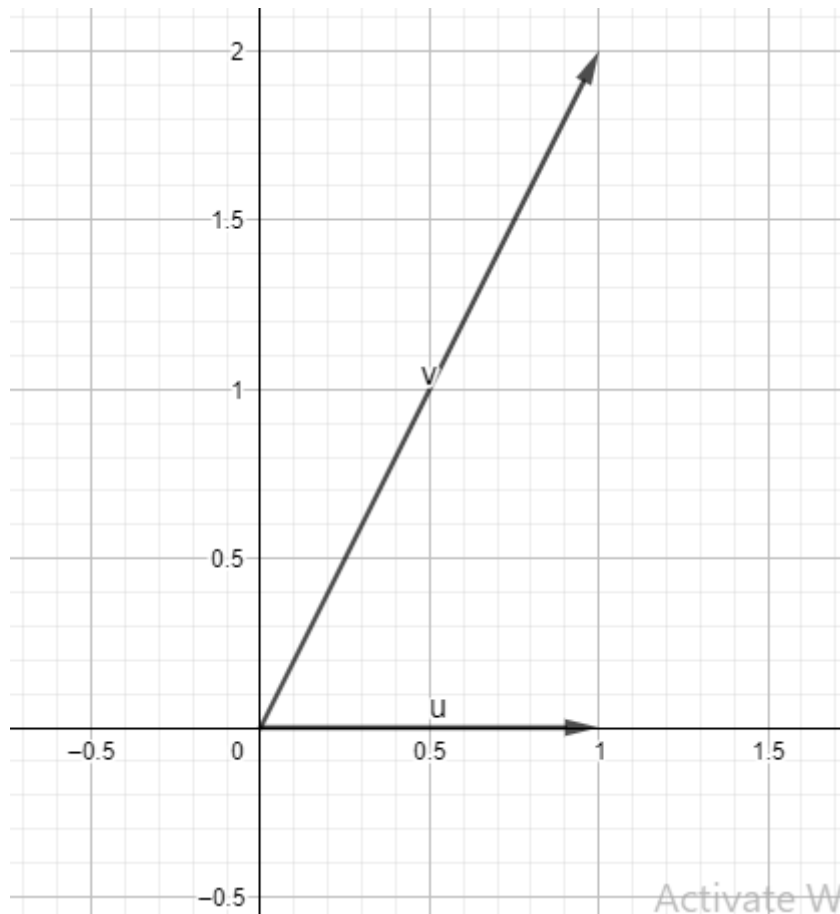


- ☐ (1,1,0)
- ☐ (1,2,3)
- ☐ (1,0.5,0)
- ☒ No solution
- ☐ Unique solution
- ☐ Infinite number of solutions



✗ Q.10. Project u onto v with projection matrix A , then project the result back onto u with a projection matrix B . The product of these projections AB is a projection. *

0/1



- ☒ True
- ☐ False

Correct answer

- ☒ False

✗

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